California's Drought Update

Sept 30, 2009

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Introduction

This drought bulletin provides a monthly update to California's water conditions. As we are nearing the beginning of the fall season, reservoir conditions are typically reaching their low conditions after summer high demands. Information in this report is based on hydrologic data compiled through either the end of August, or through late September, depending on availability. This month's report includes local drought impacts including groundwater conditions, impacts by hydrologic region, and the status of drought emergencies declared by counties. Additional drought information can be found on the drought website, http://www.water.ca.gov/drought.

Hydrologic and Water Supply Conditions

Precipitation

Water Year 2009 is the third consecutive dry year for the state. Water Year 2007-08 resulted in 63 percent of average annual precipitation across the state, and Water Year 2008-09 resulted in 72 percent of average annual precipitation. By the end of August, 2009, statewide precipitation stood at 78 percent of average for this water year. End of September and end of Water Year 2008-09 figures are not yet available. Table 1 gives the average monthly contribution to statewide precipitation as well as the current season's measurements through August 31, 2009. As Table 1 shows, this water year has had below normal precipitation thus far, with an exceptionally dry January.

State of California
Governor
Arnold Schwarzenegger

The Natural Resources Agency
Secretary for Resources
Mike Chrisman

Department of Water Resources
Director
Lester A. Snow

Month	Average Precipitation Statewide (inches)	Water Year 2008-09 Observed Precipitation	% of Average (by month)
October	1.22	0.73	60%
November	2.80	2.49	89%
December	3.91	3.05	78%
January	4.35	1.25	29%
February	3.66	5.03	137%
March	3.12	2.16	69%
April	1.64	0.50	30%
May	0.89	1.49	164%
June	0.35	0.58	166%
July	0.18	0.03	16%
August	0.28	0.06	23%
September	0.48	N/A	N/A
Total to Date (August 31, 2009)	**22.34**	**17.39**	**78% to date**

Table 1. Average statewide precipitation by month, with current Water Year precipitation through August 31, 2009. Data from California Climate Tracker (Western Region Climate Center) based on National Weather Service Cooperative Observer data.

Reservoir Storage

Statewide reservoir storage at the end of August, 2009 was 79 percent of average for the date, with individual key reservoirs much lower. Figure 1 shows the condition of the state's larger reservoirs as of September 27, 2009.

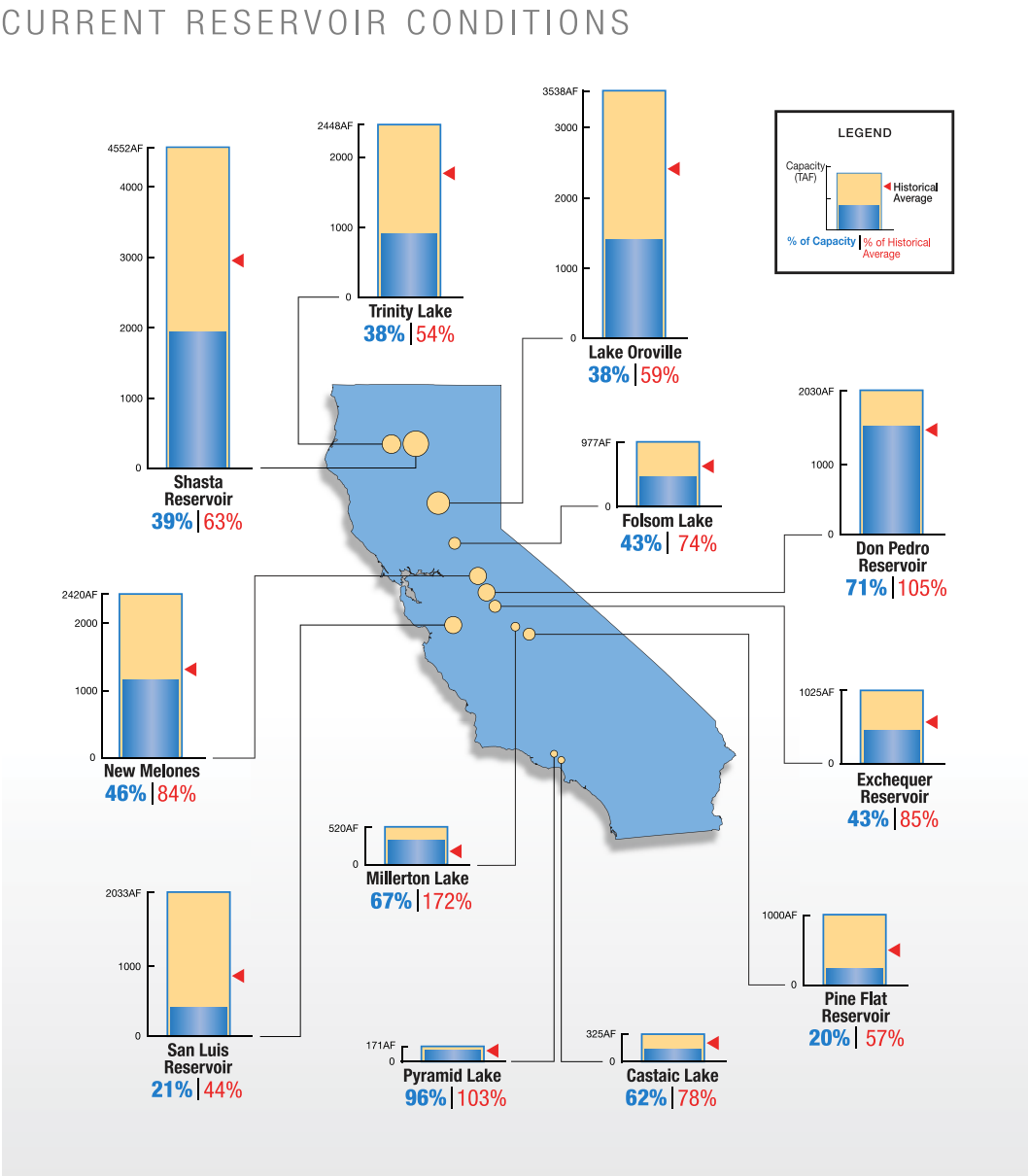

Figure 1. Selected reservoir storage for September 27, 2009 (Midnight).

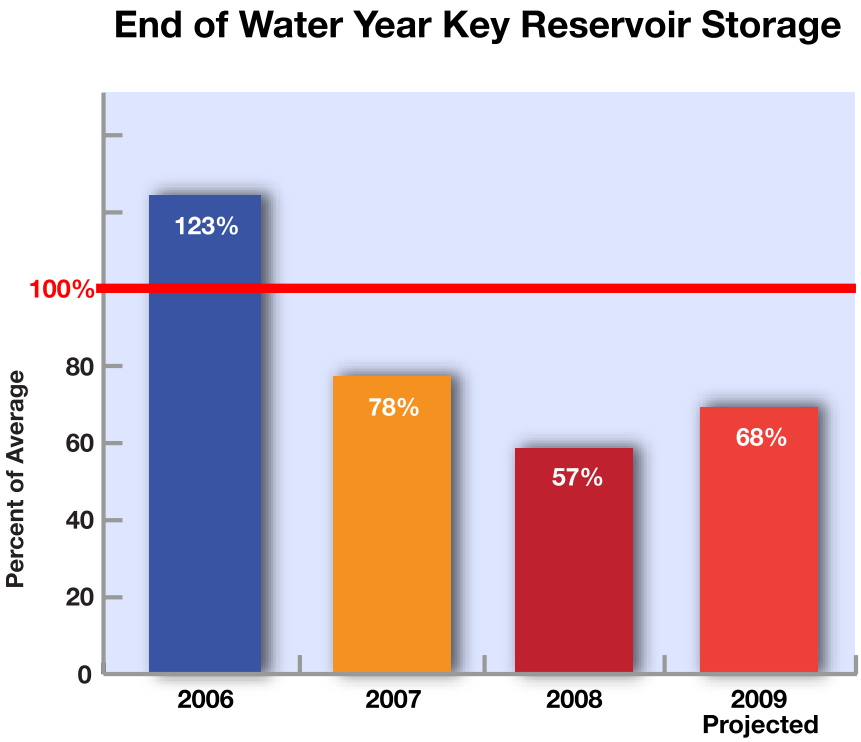

Figure 2. Percent of average storage for the state's key reservoirs at the end of the water year, from 2006 – 2009 (projected). (Trinity, Shasta, Oroville, Folsom, Don Pedro, New Melones, and San Luis)

Figure 2 shows storage for key reservoirs for the end of the last four water years, including a projection for the end of this water year, which will be September 30, 2009. The three-year drought, from 2006 to the present, is evident in the well-below normal storage readings. The state will enter the 2009-2010 Water Year with its key supply reservoirs at only 68 percent of average.

Runoff Forecasts

Figure 3 shows a comparison of statewide runoff from 2006-09. Water Year 2005-06 was the most recent wet year in California, with 172 percent of average statewide runoff. Water Year 2006-07 was the first of three dry years, ending with 53 percent of average statewide runoff. The Sacramento River region was classified as "Dry," the second driest of five classification levels, and the San Joaquin River region was classified as "Critical," the driest level. Water Year 2007-08 ended with 60 percent of average statewide runoff, and both the Sacramento and San Joaquin River regions classified as "Critical." Water Year 2008-09 is projected to end with 68 percent of average statewide runoff, and both river regions being classified as "Dry."

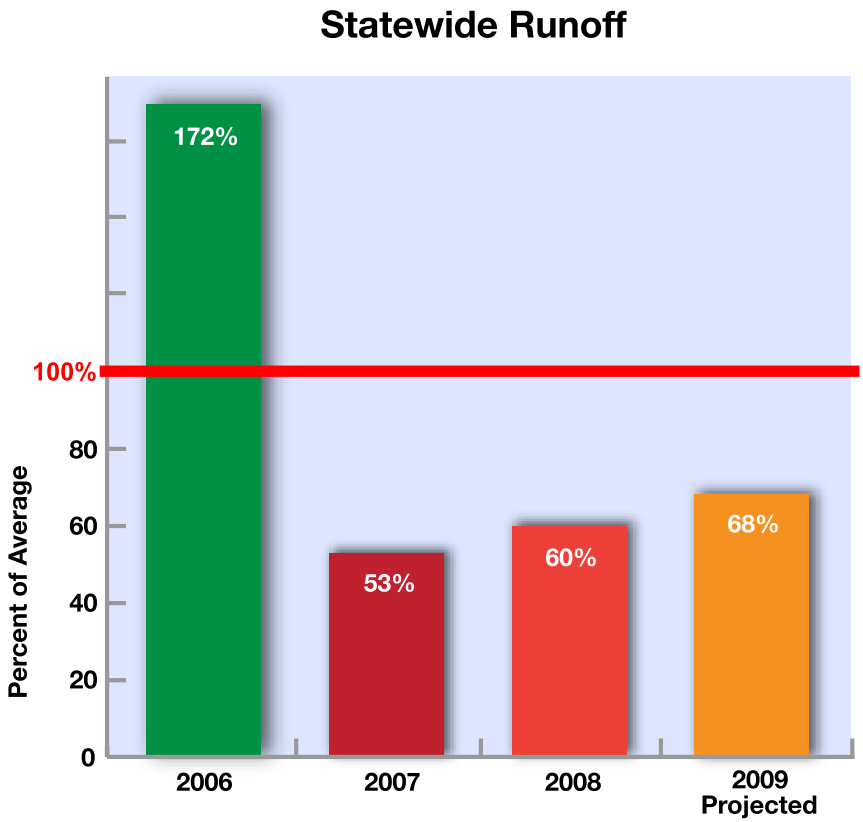

Figure 3. Statewide runoff for water years 2006, 2007, 2008 and projection as of May 1, 2009.

Local Impacts and Responses to the Drought

On September 28 a team of UC Davis researchers led by Dr. Richard Howitt revised their forecasts of 2009 water shortage employment impacts. They now estimate that this year's water shortages have led to 21,000 total jobs lost in the San Joaquin Valley, of which 16,000 are due to the drought alone, and 5,000 are due to environmental pumping restrictions. The 2009 water shortages in the Valley are projected to result in $703 million in lost agricultural gross revenue, expressed in 2008 dollars. DWR economists, who are surveying agricultural drought impacts around the state, will use these new forecasts in their research on the economic impacts of the water shortages.

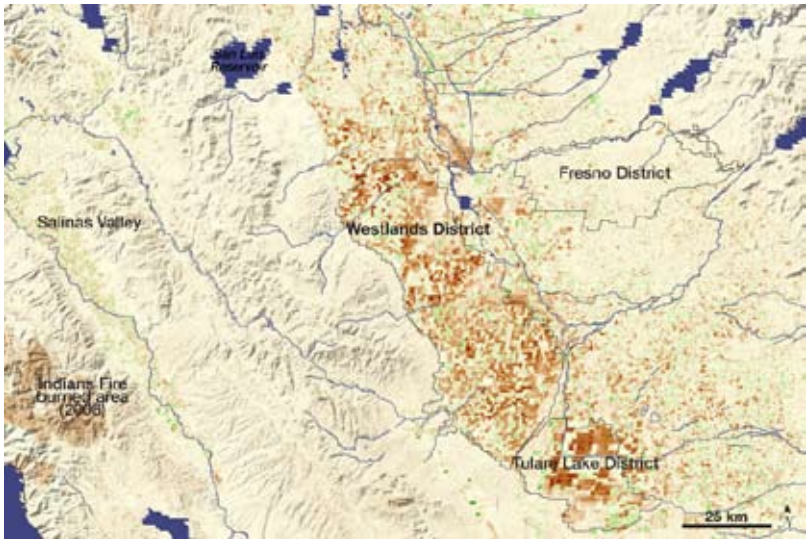

Figure 4 Vegetation Anomaly Image. The image was made from data collected by the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite between July 12 and July 27, 2009. Cream shows areas of average growth, and brown points to less plant growth than average. In this image, dark squares of brown are scattered across much of the Westlands and Tulare Lake water districts. These brown squares are fields that would ordinarily support irrigated crops. (Image and Data Courtesy of NASA, Earth Observatory)
http://earthobservatory.nasa.gov

Figure 4 shows a recent image provided by the National Aeronautic and Space Administration (NASA) showing the impact of the drought and water restrictions on farms in the Westlands and Tulare Lake Districts. According to NASA, the image shows how vegetation fared in 2009 compared to the average conditions from 2000 and 2008. Observations by DWR staff indicate that the fields shown by dark brown squares could be due to increases in fallowing, winter cropping, safflower acreage, and other crops planted to accommodate the cut in water deliveries as well as under-irrigation. State and local agencies are currently collecting information to assess actual economic impacts resulting from the current drought.

Although the continuing California drought and surface water shortages are hitting agriculture the hardest on the west side of the San Joaquin Valley, growers in several

other regions are experiencing significant negative economic impacts. Higher-cost, lower-quality ground water is replacing some of the lost surface water. Some farmers have shifted to lower-water use crops, or been able to purchase some high-cost supplemental water.

North Coast Hydrologic Region---Sonoma County Water Agency (SCWA) submitted a petition to the State Water Resources Control Board (SWRCB) on April 6, 2009 to reduce the required in-stream flows in the Russian River below Lake Mendocino. The petition included a projection showing the potential dewatering of Lake Mendocino this September. The SWRCB approved the petition, held a workshop to receive comments, and issued an amended order on May 28, 2009. The order includes conditions requiring a 25 percent reduction in SCWA summer diversions, restrictions on commercial turf irrigation, a plan for Russian River water users to reach water conservation goals of 50% in Mendocino County and 25% in Sonoma County, and increased monitoring.

Storage in Lake Mendocino in late September is about 49,600 acre-feet, slightly above the storage for last September of 42,500 acre-ft. Reduced releases from Lake Mendocino, late spring rains, and successful conservation have improved the outlook. The lake level this fall is projected to be higher than the elevation of Redwood Valley County Water District's (RVCWD) intake, but should dry conditions persist into next winter, they would need to take emergency action to supply water to their service area. To conserve water, the RVCWD shut off all agricultural deliveries on May 15, 2009, the Mendocino County Russian River Flood Control and Water Conservation Improvement District reduced their allocation to all contractors to 50 percent, and other area agencies have taken similar measures. The City of Ukiah has expedited the construction of two new wells this summer due to concerns about the reliability of their existing water supply sources. The county has received calls from individual well owners in the coastal area of Mendocino County who are experiencing difficulties with groundwater reliability.

North Lahontan Hydrologic Region---As reported in the July monthly drought bulletin, the Truckee River Watermaster projects that Lake Tahoe's water level will drop to near its natural rim (elevation 6223 feet) by this December. The water surface elevation was 6223.30 as of September 24, 2009. The last time it dropped below its natural rim was in the fall of 2004. When the lake level drops below the natural rim no significant releases can be made to the reach of the Truckee River immediately downstream of Lake Tahoe.

Sacramento River Hydrologic Region---Groundwater levels in the northern Sacramento Valley were measured this September and compared to measurements taken in the same wells that were measured in August of this year. About half of the wells showed about the same groundwater levels in September as in August, around a quarter of the groundwater levels in wells were about 13 feet lower than they were in August; and the other quarter were up to 25 feet higher. These percentages occurred in both shallower domestic wells as well as the deeper agricultural wells.

The high and low fluctuations in groundwater levels are most likely due to changes in irrigation patterns during late summer and fall harvest practices.

In southern Sacramento Valley, the height of the irrigation season is over. In many areas groundwater levels in wells are beginning to rebound due to decreased groundwater pumping, while in some wells water levels are unchanged or lower than in August. As in the Northern Sacramento Valley, these differences in measured groundwater levels are likely due to variations in fall irrigation patterns. September groundwater levels for Yolo, Yuba and Sutter Counties (data available at the time of this report) on average have risen several feet since August. In Yolo and Sutter Counties groundwater levels in individual wells show that water levels in some wells have declined since August by as much as 5 feet, while in other wells water levels have risen by over 20 feet. In Yuba County groundwater levels in some wells since August have declined by about 9 feet, and are as much as 13 feet higher in other wells.

As reported in the July drought bulletin, Sacramento's Regional Water Authority reports improvement in the drought status for some area agencies due to increased allocation from the USBR, but conditions vary. El Dorado Irrigation District and Placer County Water Agency are implementing normal ongoing conservation. The Sacramento Suburban Water District is asking customers to conserve water by 20%. Orangevale Water Company is at stage 2 water alert and urging voluntary conservation.

Bay Area Hydrologic Region---As reported in the August drought bulletin, several agencies (retail and wholesale) are continuing mandatory conservation, with most of the remaining agencies requesting voluntary conservation. Santa Clara Valley Water District continues to mandate customers to conserve 15%; North Marin Water District is continuing to enforce 25% water conservation. San Francisco Public Utility Commission is requesting customers to voluntary conserve 10%. The Contra Costa Water District is requesting 15% voluntary water savings to its customers except industrial customers who are asked to save 5%. Dublin San Ramon Services District customers are being requested to reduce their water usage by 20%. Sonoma County Water Agency continues to mandate conservation. With late spring rains, increased allocations for South Bay Aqueduct contractors, increased reliance on groundwater pumping, and effective conservation, the need for increased conservation and mandatory measures has subsided.

In Napa County, the low allocation from the State Water Project was offset by deliveries from the Drought Water Bank. Groundwater levels are dropping, with some reports of failing wells.

San Joaquin River, Tulare Lake, and Central Coast Hydrologic Regions---As of September 17, 2009, the U.S. Department of Agriculture has designated 21 counties in California as Primary Natural Disaster Areas because of losses caused by drought. In addition, 29 counties that are adjacent and contiguous to the Primary Natural Disaster Areas were designated Natural Disaster Areas. Consequently, all of the counties within the San Joaquin River, Tulare Lake, and Central Coast

Hydrologic Regions are designated as either Primary Natural Disaster Areas or Natural Disaster Areas (Table 2). Once a county is designated as a Natural Disaster Area, then qualified farm operators and ranchers are eligible for low interest emergency (EM) loans from the U.S.D.A. Farm Service Agency (FSA), provided they meet the eligibility criteria.

USDA Emergency Designation as of 9/17/2009	HYDROLOGIC REGIONS		
	San Joaquin	Tulare Lake	Central Coast
Primary Natural Disaster Area	Mariposa	Kern	San Benito
	Merced	Kings	San Luis Obispo
	San Joaquin		Santa Clara
	Stanislaus		
Natural Disaster Area	Alpine	Fresno	Monterey
	Amador	Madera	Santa Barbara
	Calaveras	Tulare	Santa Cruz
	Tuolumne		

Table 2. USDA Emergency Designation (as of 9/17/2009)

South Coast, South Lahontan, and Colorado River Hydrologic Regions---There have been no significant changes regarding anticipated shortages since the last survey of water agencies in the South Coast, South Lahontan, and Colorado River Hydrologic Regions in July, 2009. The next survey is scheduled for October, 2009. Local agencies continue to adopt drought ordinances that are intended to cut water use and implement stringent conservation measures. A common strategy in the conservation effort has been the prohibition of outdoor watering during certain periods of the day. Many agencies report that the sale of artificial turf has exceeded sales for other products, such as block or natural stone, as water users opt for desert friendly landscape to cut down their water bill. As part of an ongoing water conservation program, a local water agency in Ventura County recently announced it will give cash prizes to customers who get rid of their water-guzzling turf.

Although there has been some reduction in agriculture acreage, there are no major impacts reported at this month.

Water Conservation Actions by Local Water Agencies

As of September 25, 2009, there are 67 local water agencies in California that have mandated water conservation and 56 water agencies urging voluntary conservation measures. A current update of the number of agencies mandating conservation and urging voluntary conservation measures can be found at the Association of California Water Agencies (ACWA) website, http://www.acwa.com/issues/cadrought.

Fresno County Drought Emergency Proclamation

Bi-monthly food distributions in Mendota, Huron, San Joaquin, Firebaugh, and Selma continue to occur and are planned through the end of October 2009. According to Fresno County, approximately 14,500 individuals are served monthly. Additional volunteers and labor resources would be needed if distribution continues beyond October.

There has been no reply yet on the August 24, 2009 Governor's letter to appeal the rejection of the federal disaster declaration which would provide food commodities, unemployment assistance, and other assistance to Fresno County.

Mendocino County Drought Emergency Declaration

The Mendocino County Board of Supervisors met on September 22, 2009 and adopted a resolution extending, for an additional 14 days, the state of emergency and imminent threat of disaster in Mendocino County due to drought conditions. The original resolution was passed on March 14, 2009 declaring a local emergency due to drought conditions. A new resolution on April 7, 2009 amended and extended the original resolution and requested technical and financial assistance, equipment, and regulatory relief from the State to mitigate drought impacts. The resolution also requested a federal declaration of emergency and federal assistance. The county supervisors and water agency managers from the Ukiah area met with DWR, Ca1EMA, and other state agency executives on April 8, 2009 to request assistance with water shortages expected later this year. The supervisors passed an urgency ordinance on July 14, 2009 to establish the necessary rules and regulations on matters related to the local drought emergency, in support of the State Water Resources Control Board's 50 percent water conservation goal for the Mendocino County portion of the Russian River drainage. Mendocino County continues to work on a scaled-down version of a drought action plan to submit to Ca1EMA, focusing on Redwood Valley County Water District.

Humboldt County Drought Emergency Declaration

Water levels continue to decline in the South Fork Eel River at the Redway Community Services District (RCSD) infiltration gallery diversion structure. To meet current demands, the RCSD has enacted mandatory water conservation and has installed a pump in the river to provide additional water directly into the gallery. As a result, the RCSD estimates that it will be able to meet water demands

through the 2009 dry season. Funding for improvements to their system is expected to be granted upon approval of the final design and specifications by California Department of Public Health. The RCSD continues to collaborate with permitting agencies for determination of required features for inclusion into the final design and to obtain required permits. Construction is scheduled for summer 2010.

Kings County Drought Emergency Declaration

On June 19, 2007, the Kings County Board of Supervisors adopted Resolution No. 07-048 declaring a local emergency on the basis of drought conditions. The Resolution was renewed thereafter bi-weekly. The Resolution notes the lowering of water tables in irrigation wells throughout the region and states that for the 2009 growing season in Kings County, the County Agricultural Commissioner's office has predicted a loss of more than $58 million due to drought conditions. The Resolution authorizes the County Emergency Services Officer to consult and cooperate with Federal and State Officials about mitigating the conditions caused by the drought. The Resolution provides a means to assist rural school districts and community service districts that are not on a rural water system. Local growers near Hanford have experienced lower water pressure in some existing wells and more crops have been switched to drip-system irrigation.

Water Conservation Awareness Campaign

Under the Governor's drought response mandate, DWR in partnership with the Association of California Water Agencies (ACWA) is taking the lead in creating an educational program to teach California residents to conserve water. DWR and ACWA's State Fair exhibit highlighted the Save Our Water program and September 1 was named "Save Our Water Day" at the state fair. The first 1,000 families inside the fair gates received a bag filled with water saving information and a shower timer provided by the ACWA. The 4,000 square foot exhibit provided background on California's water history, with photos and video footage of how the past three years of below average rainfall have impacted our state in all aspects, from agriculture to recreation. Tips from the Save Our Water campaign instructed visitors how they could have a part in saving water indoors and outdoors. Many visitors expressed interest in the artificial turf and the raincatcher displays. The exhibit offered interactive activities including creating a "Water Smart" bracelet and playing a matching game of methods to conserve water indoors and out, and a water drop challenge game using ping-pong balls to save 20 percent water. Visitors received hats, slap bracelets and seeds all promoting "Save Our Water." Stage presentations included department-developed games, demonstrations of animals and how the water shortage impacts them, using native drought tolerant plants, and how to install aerators to slow faucet water flow. Visitors were encouraged to pledge to save water and 8,994 did, promising to conserve 12,802,040 gallons of water a month. Water saving information is available for download on the Save Our Water website at www.saveourH2O.org.

Planning for a Dry 2010

DWR continues to work on actions to prepare for the possibility California's drought continuing into 2010 and beyond. These include increased water conservation, a 2010 drought water bank, a long-term water transfer program, improvements to the California Irrigation Management Information System, and meeting with CalEMA and other state and local agencies to coordinate emergency response activities.

In September, DWR released an updated Model Water Efficient Landscape Ordinance (Model Ordinance) to assist local governments in reducing water waste in landscapes. The Model Ordinance addresses water budgets for landscapes, the prevention of excessive erosion and irrigation runoff, landscape and irrigation design requirements, the use of recycled water where available, irrigation audits, and the scheduling of irrigation based on local climate. DWR is planning to hold workshops throughout the state. More information can be found on the DWR website, http://www.water.ca.gov/wateruseefficiency/landscapeordinance/.

Secretary of the Interior Ken Salazar hosted a public meeting in Washington, D.C. on Sept. 30 with federal and California officials to discuss strategies for addressing a range of water supply challenges facing the state. Joining the Secretary was Deputy Secretary of the Interior David J. Hayes, Interior's Director of the Pacific Region David Nawi and Director of California Department of Water Resources Lester Snow. Among the challenges discussed were federal and state plans to address California drought impacts in 2010; the Bay Delta Conservation Plan; seismic risks and impacts; and climate change impacts, adaptation possibilities, and federal and state actions. This was the second of two public forums held by the Interior Department to address California Water Issues. The first was held in Sacramento, California, on August 12. More information on the public meeting can be found on the DWR website, http://www.water.ca.gov/news/.

For more information on Planning for a Dry 2010, see our DWR link on Drought Planning and Preparedness at http://water.ca.gov/drought/planning.cfm

Drought Contingency Plan

DWR's Water Plan staff and State Agency steering committee are working on a draft of a 5-year Statewide Drought Contingency Plan. The strategic plan is a long-term, comprehensive plan that promotes and emphasizes local drought planning efforts throughout the state and establishes a coordinated response framework. It will focus on methods to evaluate drought severity, identify impacts from droughts, and suggest measures to reduce the economic, environmental, and social risks and consequences of drought events. A draft is being prepared for presentation at the Water Plan plenary meeting on October 14 -15. The final drought contingency plan will be incorporated into the California Water Plan update and finalized by February 2010.

Drought Response Coordination with Australia

A Water Subcommittee of the CA State Board of Food and Agriculture held a videoconference meeting with Australian officials on Wednesday, September 23, 2009. The purpose of the meeting was to share common experiences regarding drought and discuss some key issues in regards to water policy. Presentations were made from CA Department of Food and Agriculture, DWR, Glenn Colusa Irrigation District and from various government, science, and farmer organizations representing Australia. A dialogue occurred on topics including agriculture and water perspectives; water licensing, selling, and transfers; and interstate water policy issues. It is believed that many of the issues facing the two sides are similar and lessons learned can be transferable. The two sides agreed to meet as needed and next steps can include defining milestones and timelines of drought periods and discussing drought impacts such as water quality and air quality.

Additional resource information provided by Australia is available on the following site: http://www.cdfa.ca.gov/State_Board/watersubcommittee.html

Summary

The three-year drought, from 2006 to the present, is evident in the well-below normal storage readings. Based on projections of storage for key reservoirs at the end of the last four water years, the state will enter the 2009-2010 Water Year, beginning October 1, with its key supply reservoirs at only 68 percent of average. Water Year 2008-09 is projected to end with 68 percent of average statewide runoff, with both the Sacramento and San Joaquin River regions being classified as "Dry." With emergency declarations in four counties currently experiencing economic or supply difficulties, the State continues to prepare for the possibility of a dry 2010.